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10/648,368	08/27/2003	Yukinobu Momozono	116609	3702

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EXAMINER

WANG, JIN CHENG

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 10/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,368	MOMOZONO ET AL.	
	Examiner	Art Unit	
	Jin-Cheng Wang	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/11/2006 has been entered. Claims 1, and 9-12 have been amended. Claims 1-12 are pending in the application.

Response to Arguments

Applicant's arguments filed September 11, 2006 have been fully considered but are moot in view of the new ground(s) of rejection of the amended claim 1.

Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim 1 recites the claim limitations of "subcharacter pixel-font generating device", "subcharacter pixel", "subcharacter fonts" and "subcharacter pixel fonts". There claim languages are not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. "subcharacter" as claimed is not necessarily the same as "subpixel". A "subcharacter" may be a

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portion of a character or a stroke of a character. Therefore, the claim 1 at least failed to describe the claim language “subcharacter” in the specification.

In view of the new claim limitation set forth in the base claim 1, Toji et al. U.S. Patent Application Publication 2003/0020729 (hereinafter Toji) Toji teaches the claim limitation “solely when a character pixel is located diagonal to the target character pixel, shifting the target character pixel by at least one subcharacter pixel to generate a shifted target character pixel and then expanding the shifted target character pixel into subcharacter fonts; and when no character pixel is located diagonal to the target character pixel, avoiding a shift in the target character pixel before expanding the target character pixel into subcharacter pixel font; repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device”.

Toji discloses at Fig. 14(a) and Fig. 15 shifting the target character pixel by at least one subpixel to generate a shifted target character pixel when a character pixel is located diagonal to the target character pixel (e.g., the pixel in the third row and the second column in Fig. 14(a) is shifted rightward by one subpixel when a character pixel is located the in upper-right diagonal to the target character pixel). Toji discloses at Fig. 14(a) and Fig. 15 avoiding a shift in the target character pixel before expanding the target character pixel into subpixel font when no character pixel is located diagonal to the target pixel (e.g., the pixel in the first row and third column of Fig. 14(a) is not shifted when no character pixel is located diagonal to the target pixel). Toji discloses at Fig. 14(a) and Fig. 15 that shifting and not shifting are repeated individually for each character pixel of the font data acquired by the data acquiring device (See also Paragraph 0171-0173 of Toji for the data acquiring device).

Moreover, it is noted that applicant's invention creates more aliasing, rather than reduce aliasing. Claim 1 recites the claim limitation "solely when a character pixel is located diagonal to the target character pixel, shifting the target character pixel by at least one subcharacter pixel to generate a shifted target character pixel and then expanding the shifted target character pixel into subcharacter fonts; and when no character pixel is located diagonal to the target character pixel, avoiding a shift in the target character pixel before expanding the target character pixel into subcharacter pixel font; repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device". This claim invention creates aliasing, rather than provide anti-aliasing for the reasons given below.

For the example character in Fig. 14(a) of Toji, applicant's claim invention would have shifted the character pixel in the fourth row and second column rightward because there is a character pixel located in the lower right of the target character pixel. This however, increases the aliasing to the character A while Toji successfully reduces aliasing of the character A. Applicant's claim invention is thus inferior to Toji for this reason.

Toji teaches repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device. Toji discloses no shifting in Fig. 7(a) and shifting in Fig. 7(c) or 7(f). See also Fig. 14(a) and Fig. 15 wherein shifting occurs for a center target pixel in the second row, and no shifting occurs for a center target pixel in the first row, fourth row. No shifting occurs also for the target pixel located in the second position of the fourth row and the fourth position of the fourth row (Fig. 14(a) and 15). Toji discloses in Fig. 25(c) and 25(d) shifting the target pixel rightward a subpixel and no shifting for the target pixel in Fig. 25(c). Toji discloses in Fig. 11(a) shifting the target pixel

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leftward or rightward by two sub-pixels. Toji also discloses the gradation adjustment for the pixels (See Toji Paragraph 0012-0014).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claim 1 recites the claim limitations of “subcharacter pixel-font generating device”, “subcharacter pixel”, “subcharacter fonts” and “subcharacter pixel fonts”. There claim languages are not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

“subcharacter” as claimed is not necessarily the same as “subpixel”. A “subcharacter” may be a portion of a character or a stroke of a character. Therefore, the claim 1 at least failed to describe the claim language “subcharacter” in the specification.

Claims 2-8 depend upon the claim 1 and are rejected due to their dependency on the claim 1.

The claims 9-12 are subject to the same rationale of rejection set forth in the claim 1.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the analysis" in line 14 of the claim. There is insufficient antecedent basis for this limitation in the claim. Claims 2-8 depend upon the claim 1 and are rejected due to their dependency on the claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. U.S. Patent No. 6,542,161 (hereinafter Koyama) in view of Toji et al. U.S. Patent Application Publication 2003/0020729 (hereinafter Toji).

Re Claims 1, 9 and 10:

Koyama teaches a font processor, comprising:

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A data acquiring device (e.g., Fig. 15A-15E) that acquires font data of bitmap fonts (*the display device 10 acquires font data as defined on a sub-pixel by sub-pixel basis; see column 11-12 and in particular see column 20, lines 45-54 for the character code being input to the display device having the character size represented as 20 dots by 20 dots; see also Fig. 29A wherein the line width of the character may be input from the input device 30 to the control section 20 and a straight line or curve may be generated according to the input line width information of the character, defining the sub-pixels along the straight line or curve as corresponding to the basic portion of the character*);

A subcharacter pixel-font generating device (e.g., Fig. 15A-15E) that separately analyzes each character pixel of the font data as a target character pixel to identify whether a character pixel is located diagonal to the target character pixel (e.g., *the subpixel font generating is performed in the character display program along with a plurality of pattern fonts stored in the storage apparatus 40. The “**pattern correction**” can be done through controlling the color element level of each subpixel; see column 12, lines 10-62; and the sub-pixel arrangement is discussed in column 13, lines 15-27; Moreover, the skeleton shape of a character as defined in 42d, the correction table 42e and the brightness table 42c of the auxiliary storage apparatus 40 which collectively stores the correction patterns of fonts; see column 19, lines 38-55; see also column 21, lines 33-42, column 29, lines 22-67, column 30, lines 1-57, column 31, lines 11-40 and Figs. 52A-67A in which the cited reference discloses the color element level of each sub-pixel arranged in the vicinity of a sub-pixel corresponding to the basic portion of the character set to one of level 6 to level 0 according to a **predetermined correction pattern selection rule** and auxiliary pattern selection rule and the setting of the color element level may be performed*

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using the correction table 42e stored in the auxiliary storage apparatus; see column 22, lines 44-61 and column 24, lines 11-38 for the selection of the correction font patterns. Therefore, the cited reference discloses using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a gradation level 3 for example, see Figs. 3, 12, 19-26);

A gradation controlling device (e.g., Figs. 15A-15E) that controls gradation levels of the subcharacter pixels constituting the subcharacter pixel fonts (*The character display program along with a plurality of pattern fonts stored in the storage apparatus 40 and when executed by the CPU 21, the character font is generated by correcting the color element level of each subpixel and the brightness level of each sub-pixel is transferred to the display device 10; Figs. 52A-67A and the corresponding disclosure regarding these figures. Therefore, the cited reference discloses using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a gradation level 3 for example, see Figs. 3, 12, 19-26).*

Koyama does not expressly disclose the term “solely when a character pixel is located diagonal to the target character pixel, shifting the target character pixel by at least one subcharacter pixel to generate a shifted target character pixel and then expanding the shifted target character pixel into subcharacter fonts; and when no character pixel is located diagonal to the target character pixel, avoiding a shift in the target character pixel before expanding the

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target character pixel into subcharacter pixel font; repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device.”

With regards to the new claim limitation of “solely when a character pixel is located diagonal to the target character pixel, shifting the target character pixel by at least one subcharacter pixel to generate a shifted target character pixel and then expanding the shifted target character pixel into subcharacter fonts; and when no character pixel is located diagonal to the target character pixel, avoiding a shift in the target character pixel before expanding the target character pixel into subcharacter pixel font; repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device”, Koyama discloses adjusting the intervals between the characters on a sub-pixel by sub-pixel basis (column 11, lines 52-64). Koyama discloses **pattern correction** using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (*see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke*) wherein the pattern correction requires that the target pixel be shifted (See Fig 6 versus Fig. 7). It would have been obvious to have modified Koyama’s pattern matching of finding the correct pattern with respect to the particular font typeface and size wherein the correct pattern is the pattern having a diagonal line of pixels according to the font typefaces wherein the pattern correction decides shifting or not shifting.

Koyama discloses using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a gradation

level 3 wherein at least one of the patterns or typefaces includes a horizontal, vertical, or diagonal line of pixels (Figs. 3, 12, 19-26).

It would have been obvious to have modified Koyama's shifting of the subpixel positions or changing the character intervals by shifting the subpixel positions according to the font typeface including a diagonal line of pixels. One of the ordinary skill in the art would have been motivated to do this to adjust the interval between characters on a sub-pixel by sub-pixel basis for characters including a diagonal line of pixels (column 11, lines 52-64).

However, Toji teaches the claim limitation "solely when a character pixel is located diagonal to the target character pixel, shifting the target character pixel by at least one subcharacter pixel to generate a shifted target character pixel and then expanding the shifted target character pixel into subcharacter fonts; and when no character pixel is located diagonal to the target character pixel, avoiding a shift in the target character pixel before expanding the target character pixel into subcharacter pixel font; repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device".

Toji discloses at Fig. 14(a) and Fig. 15 shifting the target character pixel by at least one subpixel to generate a shifted target character pixel when a character pixel is located diagonal to the target character pixel (e.g., the pixel in the third row and the second column in Fig. 14(a) is shifted rightward by one subpixel when a character pixel is located the in upper-right diagonal to the target character pixel). Toji discloses at Fig. 14(a) and Fig. 15 avoiding a shift in the target character pixel before expanding the target character pixel into subpixel font when no character pixel is located diagonal to the target pixel (e.g., the pixel in the first row and third column of Fig. 14(a) is not shifted when no character pixel is located diagonal to the target pixel). Toji

discloses at Fig. 14(a) and Fig. 15 that shifting and not shifting are repeated individually for each character pixel of the font data acquired by the data acquiring device (See also Paragraph 0171-0173 of Toji for the data acquiring device).

Moreover, it is noted that applicant's invention creates more aliasing, rather than reduce aliasing. Claim 1 recites the claim limitation "solely when a character pixel is located diagonal to the target character pixel, shifting the target character pixel by at least one subcharacter pixel to generate a shifted target character pixel and then expanding the shifted target character pixel into subcharacter fonts; and when no character pixel is located diagonal to the target character pixel, avoiding a shift in the target character pixel before expanding the target character pixel into subcharacter pixel font; repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device". This claim invention creates aliasing, rather than provide anti-aliasing for the reasons given below.

For the example character in Fig. 14(a) of Toji, applicant's claim invention would have shifted the character pixel in the fourth row and second column rightward because there is a character pixel located in the lower right of the target character pixel. This however, increases the aliasing to the character A while Toji successfully reduces aliasing of the character A. Applicant's claim invention is thus inferior to Toji for this reason.

Toji teaches repeating the analysis individually for each character pixel of the font data acquired by the data acquiring device. Toji discloses no shifting in Fig. 7(a) and shifting in Fig. 7(c) or 7(f). See also Fig. 14(a) and Fig. 15 wherein shifting occurs for a center target pixel in the second row, and no shifting occurs for a center target pixel in the first row, fourth row. No shifting occurs also for the target pixel located in the second

position of the fourth row and the fourth position of the fourth row (Fig. 14(a) and 15). Toji discloses in Fig. 25(c) and 25(d) shifting the target pixel rightward a subpixel and no shifting for the target pixel in Fig. 25(c). Toji discloses in Fig. 11(a) shifting the target pixel leftward or rightward by two sub-pixels. Toji also discloses the gradation adjustment for the pixels (See Toji Paragraph 0012-0014)

Koyama discloses pattern correction using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke). It would have been obvious to have modified Koyama's patterns for correcting the subpixel color levels using the pattern matching of finding the correct pattern with respect to the particular font typeface and size. Koyama discloses *using the correction font patterns table to match for a correction font pattern to be used for the bitmap font wherein the correction font pattern identifies a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a gradation level 3 for example, see Figs. 3, 12, 19-26.*

It would have been obvious to have used any pattern matching technique, if there is a difference at all, from those disclosed in Koyama to control the color gradation levels of the subpixels in which the font bitmap array contains a correction font pattern identifying a horizontal line, a vertical line or diagonal line of pixels or sub-pixels having a specific gradation level. It would also have been obvious to have incorporated Toji's teaching of shifting or not shifting into Koyama's font processor because Koyama teaches correction font pattern tables performing shifting the target pixel one or more sub-pixels.

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One of the ordinary skill in the art would have been motivated to do this to virtually increase the resolution of the characters being displayed on the display device and parts of a character such as oblique lines or curves can be displayed smooth and thereby significantly improving the character display quality by eliminating jaggy edges associated with the characters (Koyama column 10, lines 1-7 and Toji Paragraph 0039).

Re Claims 2-3:

Koyama does not explicitly disclose the term “shifting the subpixels”.

However, Koyama discloses pattern correction using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (*see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke*). Koyama further discloses setting the color levels for the sub-pixels according to the pattern data and therefore the color levels for the sub-pixels constituting the character increases and the color levels for the sub-pixels constituting the background decreases (Figs. 5-8, 12 and 14). Koyama further discloses the brightness levels are shifted (column 11, lines 25-38) and the brightness table defines the relationship between the color element level of a sub-pixel and the brightness level of the sub-pixel and thereby the brightness levels can be shifted in Koyama. Finally, Koyama discloses adjusting the intervals between the characters on a sub-pixel by sub-pixel basis (column 11, lines 52-64) and therefore Koyama suggests the claim limitation of “shifting the subpixels”.

It would have been obvious to have modified Koyama’s shifting the brightness levels of the sub-pixels using the shifting of the subpixel positions or changing the character intervals by

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shifting the subpixel positions. One of the ordinary skill in the art would have been motivated to do this to adjust the interval between characters on a sub-pixel by sub-pixel basis (column 11, lines 52-64).

Re Claim 4:

Koyama further discloses the subpixel-font generating device placing the subpixels constituting the pixels at positions of the corresponding pixels when the pixels constituting the font data are arranged in a horizontal line or in a vertical line (e.g., column 13, lines 10-32).

Re Claim 5:

Koyama does not explicitly disclose the term “performing the pattern correction using a matching pattern of 3 by 3 pixels”.

However, Koyama discloses pattern correction using a plurality of patterns including the auxiliary patterns according to the font typefaces and sizes (*see e.g., Figs. 55-56 wherein a plurality of patterns are disclosed with each attribute table with respect to the character size and typeface or stroke*). It would have been obvious to have modified Koyama’s patterns for correcting the subpixel color levels using the pattern matching of finding the correct pattern with respect to the particular font typeface and size. It would have been obvious to have used any different pattern matching technique from those disclosed in Koyama to control the color gradation levels of the subpixels. One of the ordinary skill in the art would have been motivated to do this to virtually increase the resolution of the characters being displayed on the display device and parts of a character such as oblique lines or curves can be displayed smooth and thereby significantly improving the character display quality (column 10, lines 1-7).

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Re Claim 6:

Koyama further discloses detecting edges included in the subpixel fonts wherein the skeleton data 42d defines the skeleton shape of a character according to the character code for identifying the character data indicating the number of strokes included in the character and stroke information for each stroke and the subpixel color element level arrangement of the character is obtained by combining together the respective sub-pixel color element level arrangement for the strokes included in the skeleton data 42d (see column 23, lines 17-28) and therefore the program and data stored in the auxiliary storage device allows an edge detecting to detect edges or skeleton included in the subpixel fonts. Moreover, Koyama discloses that the character display program along with a plurality of pattern fonts stored in the storage apparatus 40 and when executed by the CPU 21, the character font is generated by correcting the color element level of each subpixel and the brightness level of each sub-pixel is transferred to the display device 10; Figs. 52A-67A and the corresponding disclosure regarding these figures. Therefore, Koyama discloses a gradation setting device that sets the color gradation level of the pixels along the edge to an intermediate gradation level.

Re Claim 7:

Koyama further discloses setting the color levels for the sub-pixels according to the pattern data and therefore the color levels for the sub-pixels constituting the character increases and the color levels for the sub-pixels constituting the background decreases (Figs. 5-8, 12 and 14).

Re Claim 8:

Koyama further discloses a storage device that stores font data generated by the font processor (Figs. 15A-15E) and a display unit that displays the font data generated by the font processor (column 13, lines 10-28).

Re Claim 11:

The claim 11 is subject to the same rationale of rejection set forth in the claim 1. Toji's teaching as relevant to the claim invention set forth in the claim 12 is given as follows.

Toji teaches the claim limitation "when a pixel constituting the font data is located at a position that, with respect to a first direction, is diagonal to a target pixel, shifts the sub-pixels of the target pixel in the first direction by at least one sub-pixel distance; and when a pixel constituting the font data is located at a position that, with respect to a second direction opposite to the first direction, is diagonal to the target pixel, shifts the sub-pixels of the target pixel in the second direction by at least one sub-pixel distance".

Toji teaches no shifting in Fig. 7(a) and shifting in Fig. 7(c) or 7(f). See also Fig. 14(a) and Fig. 15 wherein shifting occurs for a center target pixel in the second row leftward or rightward. Toji discloses in Fig. 25(c) and 25(d) shifting the target pixel rightward a subpixel. Toji discloses in Fig. 11(a) shifting the target pixel leftward or rightward by two sub-pixels. Toji also discloses the gradation adjustment for the pixels (See Paragraph 0012-0014)

Re Claim 12:

The claim 12 is subject to the same rationale of rejection set forth in the claim 1. Toji's teaching as relevant to the claim invention set forth in the claim 12 is given as follows.

Toji teaches the claim limitation “when a pixel constituting the font data is located at a first position that, with respect to a first direction in which subpixels are to be aligned, is adjacent to a target pixel, disposes subpixels at the position of the target pixel without shifting the target pixel” (See the target pixel in Figs. 14(a) and 15 that is located at the center of fifth row receives no shifting).

Toji teaches the claim limitation “when no pixel constituting the font data is located at the first position and also a pixel constituting the font data is located at a second position that, with respect to a second direction orthogonal to the first direction, is adjacent to the target pixel, disposes subpixels at the position of the target pixel without shifting the target pixel” (See Fig. 14(a) and 15 wherein the leftmost pixel on the last row meeting the claim limitation of “the target pixel” in this context, but receives no shifting as claimed).

Toji further teaches the claim limitation “when no pixel constituting the font data is located at the second position and also a pixel is located at a third position that is adjacent and diagonal to the target pixel, shifts the target pixel by at least one sub-pixel distance and then disposes sub-pixels at the position of the target pixel, wherein when the third position where the pixel is located is to one side of the target pixel, the target pixel is shifted in one direction, and when the third position where the pixel is located is to another side of the target pixel that is opposite to the one side, the target pixel is shifted in a direction opposite to the one direction (e.g., Toji teaches in Fig. 14(a) and 15 shifting the second pixel in the 3rd row rightward by one sub-pixel and shifting the fourth pixel in the 3rd row leftward by one sub-pixel. It is clear the second pixel in the 3rd row and the fourth pixel in the 3rd row meet the claim limitation of “the target pixel” as claimed).

Conclusion

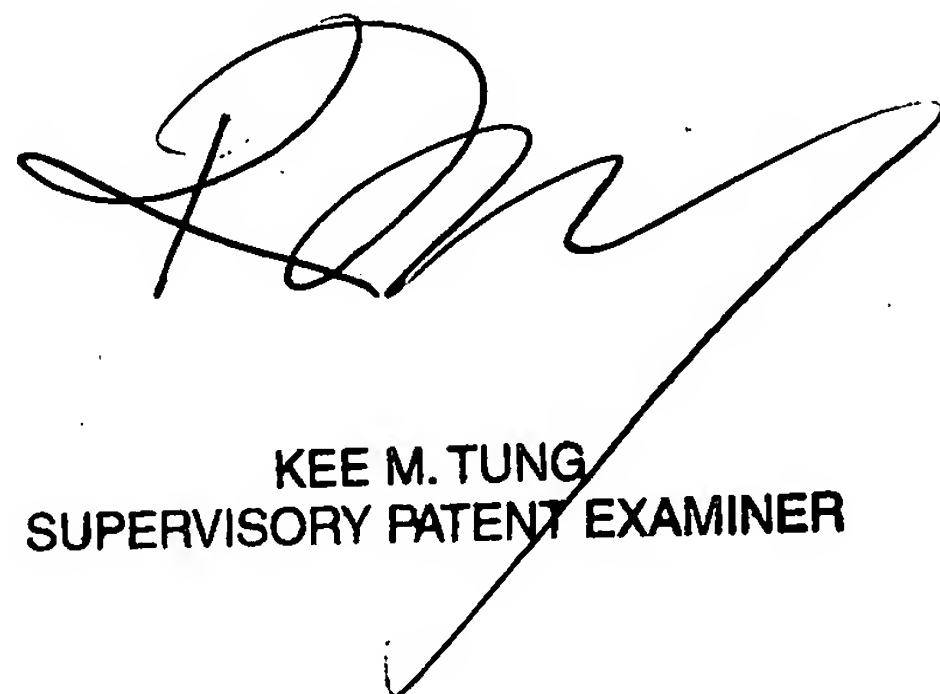
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665.

The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on (571) 272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jcw



KEE M. TUNG
SUPERVISORY PATENT EXAMINER